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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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10/730,162

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Yushi Ono

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EXAMINER

LUKS, JEREMY AUSTIN

ART UNIT

PAPER NUMBER

2837

MAIL DATE

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PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No. 10/730,162	Applicant(s) ONO ET AL.	
	Examiner JEREMY LUKS	Art Unit 2837	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 25 February 2009.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1,2 and 4-22 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☒ Claim(s) 1,2 and 4-20 is/are allowed.
- 6) ☒ Claim(s) 21 and 22 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

1. Claim 21 is rejected under 35 U.S.C. 103(a) as being unpatentable over Ward (4,076,098) in view of Mizone (7,123,738) and Nishimura (JP 08337666 A – See machine translation attached to end of JP document). Ward teaches a loudspeaker diaphragm comprising a base layer (Figure 1, #11) having a woven fabric of a fiber impregnated with a thermosetting resin (Col. 1, Lines 51-53). Ward fails to teach wherein the base is made of polyethylene naphthalate, wherein the polyethylene naphthalate fibers are each an untwisted fiber; and untwisted fiber, and wherein the fineness of the polyethylene naphthalate fibers is from 800 to 1,200 denier. Mizone teaches a base layer made of a polyethylene naphthalate fiber impregnated (Col 1, Lines 26-34). It would have been obvious to one of ordinary skill in the art at the time of the invention to combine the apparatus of Ward, with the apparatus of Mizone to provide a speaker diaphragm that is light weight, provides larger internal loss, is excellent in rigidity and provides excellent sound quality. Nishimura teaches a diaphragm (Translation, bottom of [0042 – see speaker cone]) having a woven base made of a plurality of untwisted fibers (Translation, [0045]). It would have been obvious to one of ordinary skill in the art at the time of the invention to combine the apparatus of

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Ward as modified, with the apparatus of Nishimura to improve the impregnating ability of the resin to the fibers, since untwisted fibers allow for a higher cover factor than twisted fibers, of the resin to fibers. This will provide a more even distribution of resin throughout the speaker diaphragm, improving durability and overall performance. It would have been an obvious design choice to provide wherein the fineness of the polyethylene naphthalate fibers is from 800 to 1,200 denier, since such a modification would have involved a mere change in the size of a component. A change in size is generally recognized as being within the level of ordinary skill in the art. In re Rose, 105 USPQ 237 (CCPA 1955). Further, it has been held that where the general conditions of a claim are disclosed in the prior art, discovering the optimum or working range involves only routine skill in the art. In re Aller, 105 USPQ 233.

2. Claim 22 is rejected under 35 U.S.C. 103(a) as being unpatentable over Ward (4,076,098) in view of Mizone (7,123,738), Nishimura (JP 08337666 A – See machine translation attached to end of JP document) and Ogura (5,744,761). Ward teaches a loudspeaker diaphragm comprising a base layer (Figure 1, #11) having a woven fabric of a fiber impregnated with a thermosetting resin (Col. 1, Lines 51-53), whereby the fiber; and curing the thermosetting resin, so as to form a base layer (Col. 2, Lines 33-38). Ward fails to teach wherein the base is made of polyethylene naphthalate, and wherein the polyethylene naphthalate fiber is an untwisted fiber and wherein a laminated structure having a woven fabric layer and a resin layer is substantially formed in the base layer. Mizone teaches a base layer made of a polyethylene naphthalate fiber impregnated (Col 1, Lines 26-34). It would have been obvious to one of ordinary skill in

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the art at the time of the invention to combine the apparatus of Ward, with the apparatus of Mizone to provide a speaker diaphragm that is light weight, provides larger internal loss, is excellent in rigidity and provides excellent sound quality. Nishimura teaches a diaphragm (Translation, bottom of [0042 – see speaker cone]) having a woven base made of a plurality of untwisted fibers (Translation, [0045]). It would have been obvious to one of ordinary skill in the art at the time of the invention to combine the apparatus of Ward as modified, with the apparatus of Nishimura to improve the impregnating ability of the resin to the fibers, since untwisted fibers allow for a higher cover factor than twisted fibers, of the resin to fibers. This will provide a more even distribution of resin throughout the speaker diaphragm, improving durability and overall performance. Ogura teaches wherein a laminated structure having a woven fabric layer (12) and a resin layer is substantially formed in the base layer (Col. 2, Lines 59-62; Col 4, Lines 24-31). It would have been obvious to one of ordinary skill in the art at the time of the invention to combine the apparatus of Ward as modified, with the apparatus of Ogura to increase stiffness of the base layer by laminating the fiber layer and thermoplastic layers, as opposed to the curing method used by Ward.

Allowable Subject Matter

3. Claims 1, 2 and 4-20 are allowed.
4. The following is an examiner's statement of reasons for allowance: The prior art of record fails to teach or suggest any obvious combination of the limitations discussed in the previous Office Action, and further comprising the limitations of **(With respect to**

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Claims 1, 14, 15 and 17) a base layer having a woven fabric of a plurality of untwisted polyethylene naphthalate fibers and impregnated with a thermosetting resin, wherein the loudspeaker diaphragm exhibits an internal loss of 0.40 or more.

Any comments considered necessary by applicant must be submitted no later than the payment of the issue fee and, to avoid processing delays, should preferably accompany the issue fee. Such submissions should be clearly labeled "Comments on Statement of Reasons for Allowance."

Conclusion

5. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to JEREMY LUKS whose telephone number is (571)272-2707. The examiner can normally be reached on Monday-Thursday 8:30-6:00, and alternating Fridays.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Walter Benson can be reached on (571) 272-2227. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Jeremy Luks/
Examiner, Art Unit 2837

/Jeffrey Donels/
Primary Examiner, Art Unit 2837